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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/828,828	04/10/2001	Vladimir M. Doroshenko	200976US-99	7534

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EXAMINER

SOUW, BERNARD E

ART UNIT	PAPER NUMBER
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2881

DATE MAILED: 11/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/828,828	DOROSHENKO, VLADIMIR M.	
	Examiner	Art Unit	
	Bernard E Souw	2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-63 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-63 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 April 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 64-71 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected subcombination, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in a Provisional Election dated 09/15/2003.

2. Applicant's election with traverse of the Restriction Requirement dated August 13, 2003, submitted with the Provisional Election received September 15, 2003, is acknowledged. The traversal is on the ground(s) that the Patent Office does not provide any "*demonstration that the combination as claimed does not require the particulars of the subcombination for patentability*". This is not found persuasive because (a) the argument is not supported by facts as required by 806.05(c), (b) the restriction imposed by the Examiner is solidly supported by the fact, there are hundreds of patents issued on mass spectrometers (many also in tandem mode) that do not recite any computer in the claims and/or specification, and (c) Applicant's unpersuasive attempt to present claims 64-71 as product (by process) type of claims by using the wording "a computer program **product**", where the body of the claim, reciting (e.g. independent claim 64) storage medium, computer program code mechanism, and various computer code devices, clearly has nothing to do with any product related to the mass spectrometer of the preceding claims 1-63, but to belongs to a computer system

that may --but not necessarily-- be linked to the mass spectrometer as claimed in claims 1-63. In particular, the mass spectrometer as claimed in claim 1-63 does not need to be equipped with a computer as claimed in claims 64-71. In fact, it does not even need a computer at all, since it can be operated in old fashion way, when the computer was not yet available (see also the prior arts applied to the claim rejections).

The requirement is still deemed proper and is therefore made FINAL.

Information Disclosure Statement

3. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

4. The information disclosure statement filed along with the Provisional Election received September 15, 2003 fails to comply with 37 CFR 1.98(a)(1), which requires a list of all patents, publications, or other information submitted for consideration by the Office. It has been placed in the application file, but the information referred to therein has not been considered.

5. The information disclosure statement filed along with the Provisional Election received September 15, 2003 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because it was not in the form of a separate list. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

Specification

6. The disclosure is objected to because of the following informalities:

(a) Sect. [0002] recites a computer program product as part of the invention. It is not clear what is thereby meant: a *program*, or a *product*. If it is a program (computer software), it belongs to the category of non-statutory subject matters and is rejected under 35 U.S.C. § 101. If it is a product (by process), it is not clear what kind of process is used to produce the claimed product. It is then rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement, since the process that is used to make the product is not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

(b) Sect. [0008], [0009], [0013], [0015]-[0025], [0050], [0054], [0056] and [0059] are objected to for containing prior art references that should have been properly filed as a separate list of Information Disclosure Statement.

(c) Sect. [0042] referring to Fig.3A and Sect. [0043] referring to Fig.3B are exchanged in their contents. Either corrected drawings or an amendment of the respective sections are required in reply to the Office action to avoid abandonment of the application.

Appropriate correction is required.

Drawings

7. The drawings are objected to because Fig.3A and Fig.3B --as understood by one of ordinary skill in the art-- are exactly the opposite of their description in Sect.[0042] and [0043]. Either corrected drawings or an amendment of the respective sections are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

8. Figures 1A,B,C and 2A to 2D should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1, 3-20, 22 and 24-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Verentchikov et al. (USPAT6,534,764)

► Verentchikov et al. disclose a mass spectrometer as shown in Fig.2, comprising an ion source 22 configured to produce ions from a sample 31; an extraction device 32 to extract ions from the ion source 32; a time-of-flight (TOF) mass analyzer (MA) 33 to analyze ions and ion fragments from a first extraction; as recited in Col.9/ll.40-50, whereby the CID cell 26 and its accessories may be discarded if not required or not desired; a (second) mass analyzer 27 shown in Fig.2 or MS2 in Fig.5, which can be substituted by an ion trap (IT) mass analyzer as recited in Col.6/ll.60-64, this second MA (MS2) for analyzing ions and ion fragments from a second extraction by extractor element 54; an ion guiding optical element 86 or 87 shown in Fig.5 to guide ions and ion fragments from the first extraction (by first extractor 32) into the TOF 83 (or TOF 23 in Fig.2) as recited in Col.15/ll.38-58, and ion guiding optical element 52 and/or 54 shown in Fig.2 to guide ions and ion fragments of the second extraction (by virtue of element 54 in Fig.2) into the substitute IT (MS2 in Fig.5 modified according to Col.6/ll.60-67) in a tandem mode of operation.

It would have been obvious to one of ordinary skill in the art to arrange Verentchikov's mass spectrometer as configured in Fig.2 and Fig.5 to form a tandem MS with a linear TOF 33 of Fig.2 as a first MA, and MS2 of Fig.5 as a second MA substituting the orthogonal TOF (o-TOF) 55-57-58-59 shown in Fig.2 with an IT according to Col.6/ll.60-67, since it is well-known in the art that IT and TOF are interchangeable as equivalent substitutes, to be made according to the specific needs and deliberate design choice of the user. This official notice on the equivalence of TOF and IT is supported by Bateman et al. (USPAT 6,586,727) as recited in Col.5/ll.5-10, and by Hoyes (USPAT 6,570,152), as recited in Col.6/ll.3-9.

It would have been an obvious matter of design choice to substitute an IT for the MS2 in Fig.5 or o-TOF 55-57-58-59 of Fig.2 according to Col.6/ll.60-67, since applicant has not disclosed that ***either one of TOF and IT*** solves any stated problem or has any particular purpose and it appears that the invention would perform equally well with a TOF in Fig.2 as well as an IT in place of MS2 in Fig.4. Therefore, Applicant's use of an ***IT as a second mass analyzer*** is a mere matter of design choice that is unpatentable, because it only involves routine skill in the art.

- Specifically regarding claim 22, which is a method claim specifically for use with the MS of claim 1, the additional limitation of selecting between TOF-MA and IT-MA is inherent in Verentchikov, as expressly recited in Col.6/ll.60-64.

- Specifically regarding claim 50, the specific limitation of a means to make an alternative selection between TOF-MA and IT-MA, is known in the art as being easily accomplished by at least two means, (a) Deactivating the linear TOF section 23 of Verentchikov's Fig.2 to operate with IT-MA only and obtain IT mass spectra, deactivating the IT-MA section (but keep the ion detector operating) to operate with TOF-MA only and obtain TOF mass spectra, or activating both TOF and IT MAs to operate the two MS in tandem, and (b) by using deflectors to deflect the ions while putting the two alternative MAs next (or parallel) to each other. This official notice is rendered obvious by Reinhold et al. (USPAT 6,483,109) as implicated by Fig.5B and 5C combined, while using a TOF in the configuration of Fig.5B, and using an IT in the configuration of Fig.5C.

The rationale to modify Verentchikov's with Reinhold's and combine Reinhold's configurations of Fig.5B and 5C, and alternatively deflect the ions into either one of the two MSs, does not have to be expressly stated in the prior arts; in the present case the rationale is reasoned from knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

This relates to suggestion/motivation in that "having established that this knowledge was in the art, the Examiner could then properly rely on a conclusion of obviousness 'from common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in a particular reference'." *In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969).

► Regarding claims 3-6, 24-29 and 51-54, all Verentchikov's MS embodiments are operated either with a vacuum MALDI, an AP-type ion source (including APCI), an AP-MALDI, or an ESI source, as recited in Col.1/II.39-65 and Col.15/II.38-45.

► Regarding claims 7, 32, 33 and 55, the limitation of time-lag focusing the extracted ions is inherent in Verentchikov's, as recited in Col.1/II.53-54 and Col.10/II.56-60.

► The limitations of claims 8 and 40 are already inherent in previously rejected claims 1 and 22.

► Regarding claims 9-11, 42 and 43, the limitations of an end cap reflectron TOF mass analyzer and its operation for ion detection are shown in Fig.2 and Fig.4, showing ions are reflected by ion mirror 58 onto the detector 59, as recited in Col.13/II.36-37. Although not particularly shown in Fig.2 and 4, it is known in the art that the ion mirror can be terminated by an end cap to constitute the well-known and widely used end cap reflectron. This official notice is supported by Hoyes, as shown in Fig.3 by end cap 34, while reciting in Col.3/II.33-67 and Col.4/II.1-14 the definition of a reflectron, which obviously matches the condition in Verentchikov's TOF ion reflector depicted in Fig.2 and Fig.4.

- ▶ Regarding claims 12-15, the limitation of a through hole that permits a second ion extraction to be directed into the IT MS in place of MS2 of Fig.2, is also inherent in Verentchikov's, as shown by the hole or aperture 50d, recited in Col.9/II.61-63.

- ▶ Regarding claims 16, 45-48 and 61-63, the technical details of an IT-MS design and its operation are inherent in Verentchikov's Col.6/60-61. This official notice is supported by Reinhold, as recited in the sections subsequent to Col.1/II.47-56.

- ▶ Regarding claims 17 and 49, the limitation of a single ion detector for use with the TOF and IT mass spectrometers is conventional, as recited in Col.16/II.33-34, wherein a micro-channel plate detector is known in the art as a single ion detector.

- ▶ Regarding claims 19 and 20, a multipole ion guide 52 or 53 is recited in Col.9/II.59-60.

- ▶ Regarding claims 18, 30, 31, 34-39, 41 and 44, all the limitations of applying voltages for ion extraction, ion guidance, ion acceleration and ion detection, are conventional for a TOF, IT and tandem TOF + IT mass spectrometers, and hence, already inherent in Verentchikov's.

► Regarding claims 56-60, the limitations regarding ion guidance into the TOF, ion acceleration through the TOF and ion reflection at the end of a reflectron TOF are all well-known in the art for being conventional, and hence, are not patentable.

11. Claims 2 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Verentchikov et al. in view of Weinberger et al. (USPAT 2002/20182649 A1).

Verentchikov et al show all the limitations of claims 2 and 23, as previously applied to the parent claims 1 and 22, except the recitation of an array of samples. Weinberger et al. disclose a tandem mass spectrometer for detecting ions and ion fragments very similar to Verentchikov's. However, instead of using a single sample Weinberger et al. use a sample array, as recited in Sect.[0248].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a sample array, since much energy and time can be saved, especially in case of routine measurements of ion fragments involving large number of samples.

12. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verentchikov et al. in view of Vestal (USPAT 6,348,688).

Verentchikov et al show all the limitations of claim 21, as previously applied to the parent claim 1, except the recitation of using a computer to control the spectrometer operation.

To use a computer to control the complex operation of a device, including spectrometers, is conventional. It is commonly incorporated in state-of-the-art devices, as recited by Vestal in Col.9/II.50-55.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a computer to control the operation of a complex instrument such as a tandem spectrometer due to its large number of functions to control and coordinate, since much energy and time can thereby be saved and operation errors can be effectively prevented.

Communications

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard E Souw whose telephone number is 703 305 0149. The examiner can normally be reached on Monday thru Friday, 9:00 am to 5:00 pm..


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on 703 308 4116. The central fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306 for regular communications as well as for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.

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